## Noise disturbs comfortable sleep.

## A Comprehensive Literature Review of the Current State of the Sound Environment in a Neonatal Intensive Care Unit

SUGIURA M<sup>1</sup>, SHIMIZU J<sup>1</sup>, MIYATA M<sup>2</sup>, YANO Y<sup>3</sup>, NIINOMI K<sup>4</sup>

- 1. Faculty of Nursing, Graduate School of Health Sciences, Fujita Health University
- 2.Department of Pediatrics, Fujita Health University School of Medicine, Japan 3.Nursing Department, Fujita Health University Hospital

4.Nursing for Next Generation Department of Integrated Health Sciences Graduate School of Medicine, Nagoya University

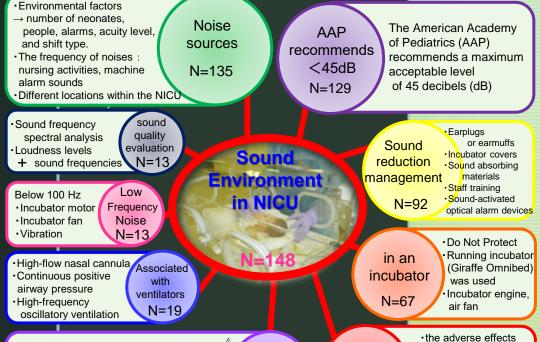


**Background:** Noise is a complex problem that is ubiquitous in NICU's environment. Although sound per se is not bad in itself and may even be advantageous, it is important to consider what sounds are difficult for preterm infants to process and where they come from?

**Aims:** In this study, we comprehensively reviewed the available literature on noise assessment indicators and noise countermeasures in NICUs.

Methods: Using the databases of PubMed, Google Scholar and the Japanese Medical Abstracts Society, we searched English and Japanese publications on noise assessment indicators and countermeasures, examined methods of analyzing sound environments, and the present status of noise countermeasures in NICUs.

**RESULTS:** Of the 148 articles included, 135 (91.2%) were studies on noise sources.



· A dosimeter (data logger) · Sound-level meter

- Microphones
- A Smartphone Application

LA-7500 (Ono Sokki Co., Ltd.)

→ undesirable effects measuring physiologic and behavioral effects N=60 N = 47 staff performance ·parents' satisfaction

Conclusion: The first step in implementing noise control is to measure and evaluate the sound environment. Since the increase or decrease in noise levels in the NICU tends to propagate in the incubator, it is necessary to appropriately identify noise sources that may affect preterm infants and to compare them with related factors.

Ethical considerations: This study was conducted with the approval of the Ethics Review Committee for Medical Research at Fujita Medical University, the institution to which the researchers belong (Accession No. HN22-110).

Funding: This work was supported by JSPS KAKENHI Grant Number JP22k11021, and The Sumitomo Foundation for Environmental Research Projects.